



ThoughtWorks®

# **Considerations & pitfalls when migrating from on-premise to public cloud**

*SACON NY | February 28, 2018*

# WHO AM I?

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@joatmon08

Platform & Infra @Thoughtworks

## WHAT'S "SOFTWARE ARCHITECTURE"?

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**Software** = Applications

**Architecture** = Technical

## WHAT'S "SOFTWARE ARCHITECTURE"?

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**Software** = Applications  
+ Domains + Infrastructure

**Architecture** = Technical  
+ Data + Security + System + Operations

## OUR CLIENTS MOVE TO PUBLIC CLOUD BECAUSE...

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“We want to **change** quickly.”

“We want to elastically **scale**.”

“We want to utilize cloud/SaaS **offerings**.”

## OTHER MIGRATION PATTERNS

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On-Premise to Public Cloud

Hybrid Cloud

Traffic Shifting





**Pick the First Candidate.**

YOUR FIRST CANDIDATE...

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**Important** but not **Critical**

Greenfield vs. Brownfield

Lift & Shift vs. Cloud-Native

Client-Facing vs. Internal

Monolith vs. Microservice



YOUR FIRST CANDIDATE...

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**Important** but not **Critical**

Greenfield vs. Brownfield

Lift & Shift vs. Cloud-Native

**prove VALUE**

Client-facing vs. Internal

Monolith vs. Microservice

## FOR DATA, CONSIDER...

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regulatory  
limitations

data transport

dataset size



cost

performance

backups



**Remember the Domain.**

## REMIND YOURSELF...

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business domain



user flow



secret sauce

not the



technical solution



S<sub>1</sub> I<sub>1</sub> M<sub>3</sub> P<sub>3</sub> L<sub>1</sub> E<sub>1</sub>

O<sub>1</sub>

R

## A MISCONCEPTION

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Public Cloud Migration is **not**  
Digital Transformation.





**Use Build Pipelines.**

## WHAT'S A PIPELINE?

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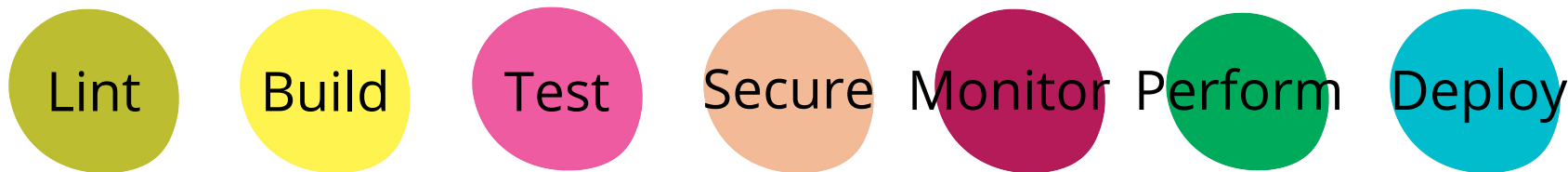
“..is an automated **manifestation** of your process for getting software from version **control** into the hands of your users.”

Continuous Delivery: Reliable Software Releases through Build, Test, and Deployment Automation

**manifest** = technical architecture  
“we are using containers”

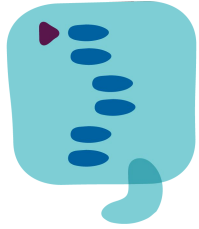
**control** = auditing architecture  
“no direct access”

When I need to deploy **anything**,  
then I should do it through a **pipeline**.

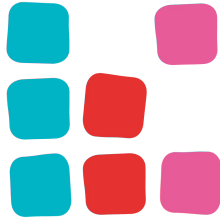


# PIPELINES EVOLVE OVER TIME

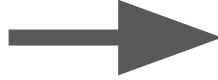
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Template  
Generators



Shared  
Libraries



Pipeline-as-  
Code



Pipeline-as-  
Service



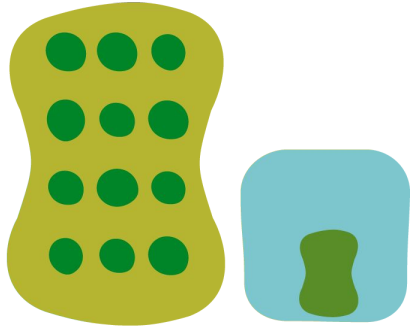


**Apply Patterns to Infrastructure.**

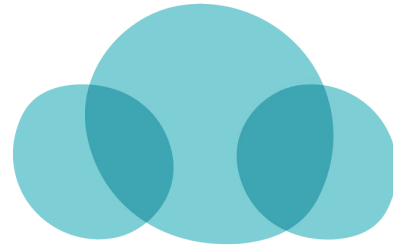


# THE ANTI-PATTERN

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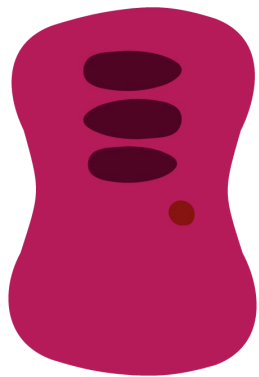
On-Premise  
Architecture



Public Cloud  
Architecture

# SELF-SERVICE

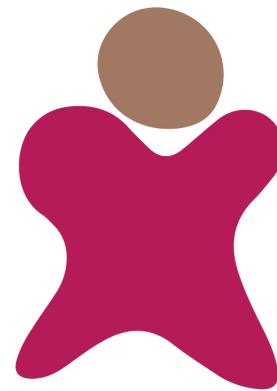
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Infrastructure  
Services









Platform  
Services



Self-  
Service

# INFRASTRUCTURE-AS-CODE

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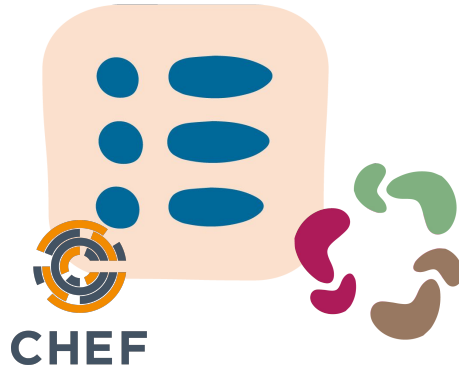
unit test	deploy	integration test	smoke test
<p>inspec exec -t docker://</p> 	<p>docker push</p> 	<p>docker compose</p> 	
<p>terraform plan</p> 	<p>terraform apply</p> 	<p>inspec exec</p> 	<p>"I should be able to deploy a ___ on my platform."</p>



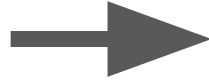
**Standardization over  
Customization.**

## REPLACE HOMEGROWN SOLUTIONS WITH INDUSTRY TOOLS

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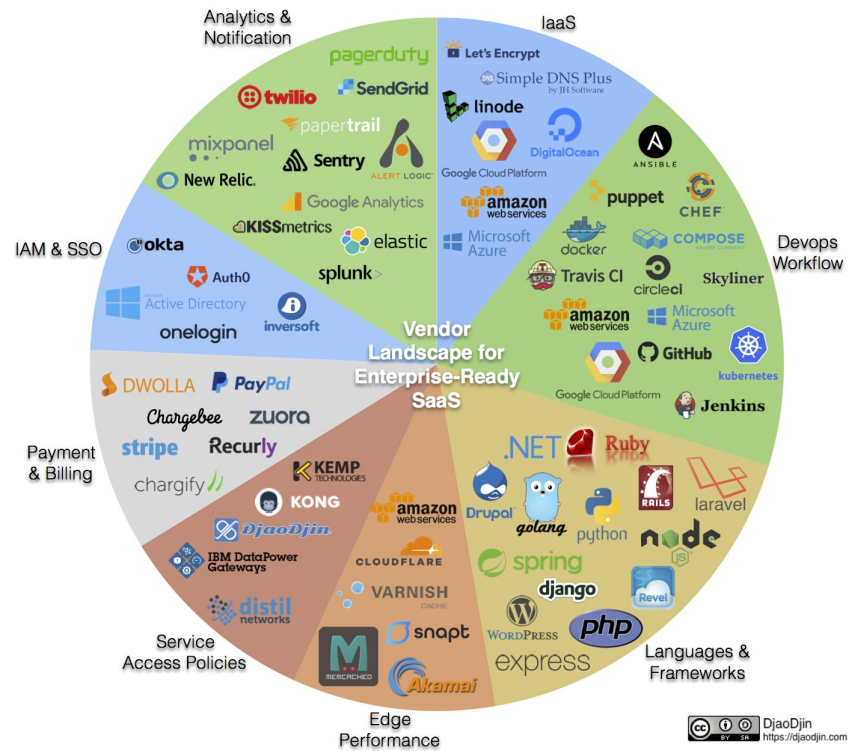
Homegrown  
Image Builder



Industry  
Tool

# SOFTWARE-AS-A-SERVICE

The Landscape for Enterprise-Ready SaaS

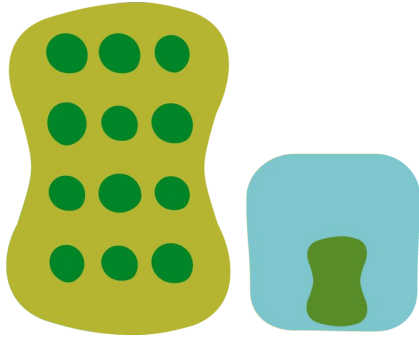




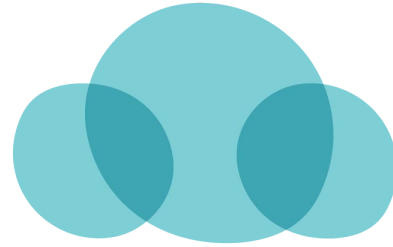


**Security First.**

## WE RECOGNIZE THAT...



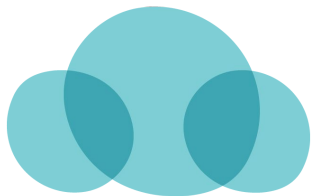
On-Premise  
Security



Public Cloud  
Security

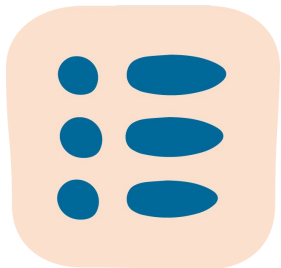
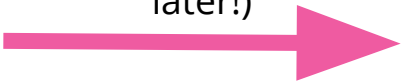
# THE ANTI-PATTERN

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We **think** this policy  
or configuration  
works...

(we'll figure it out  
later!)



\* add to the list of  
**tech debt**

# THE ANTI-PATTERN

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## Misconfigured Amazon Web Services **bucket** exposes 12000 social ...

SC Magazine - Feb 5, 2018

Another misconfigured Amazon Web Services (AWS) **S3** cloud storage **bucket** has been left insecure this time exposing the sensitive data of 12,000 social ...

Researchers noted that while no financial information was **compromised**, the leak damages the brands credibility and more importantly exposes ...

works...

# EVERYTHING SECURITY-RELATED...

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Identity  
Provider



Secrets  
Management



Artifact  
Management

**should be**



Self-Service



Pipelines



Cloud-Friendly





**Reduce the Risk.**



## ENSURE NON-FUNCTIONAL REQUIREMENTS

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Is your system **performant**?

Is your system **resilient**?

Where are your **bottlenecks**?

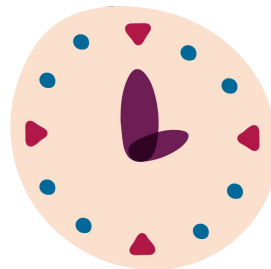
Which **parts** need to be highly available?

## TAKE SOME MEASUREMENTS

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client experience  
(business metrics)

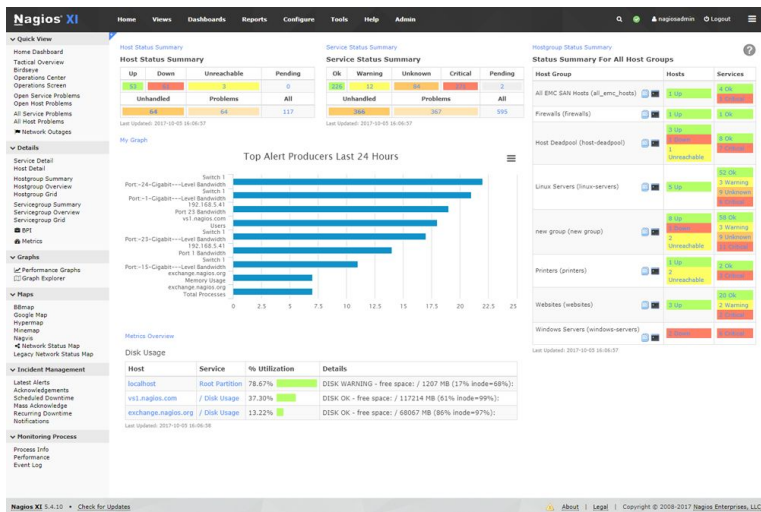


mean time to recovery  
(devops metrics)



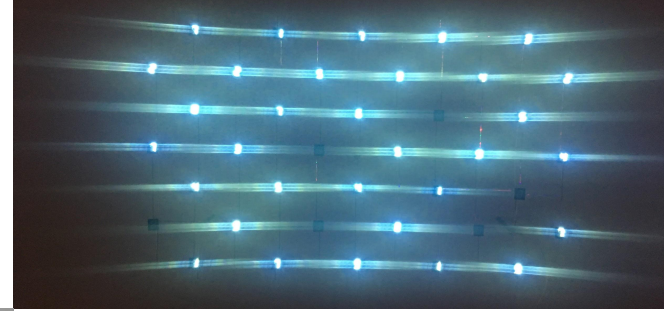
**Create a Cloud Culture.**

# product teams learn



# operations & observability

infrastructure  
& security  
teams learn



development  
&  
testing

EVERYONE (PRODUCT, INFRA, & SECURITY)...

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uses similar **developer workspaces**.

learns **containers**.

learns **pipelines**.

**breaks habit** of direct access.





Pick the First Candidate.

Remember the Domain.

Use Build Pipelines.

Apply Patterns to Infrastructure.

Standardization over Customization.

Security First.

Reduce the Risk.

Create a Cloud Culture.



## Essential Guide

### MANAGE

# A comprehensive look at the path to cloud migrations

Despite roadblocks in the process, cloud migrations can bring significant rewards. To successfully move to the cloud, organizations need to craft a migration strategy, assess risks and plan for surprises.



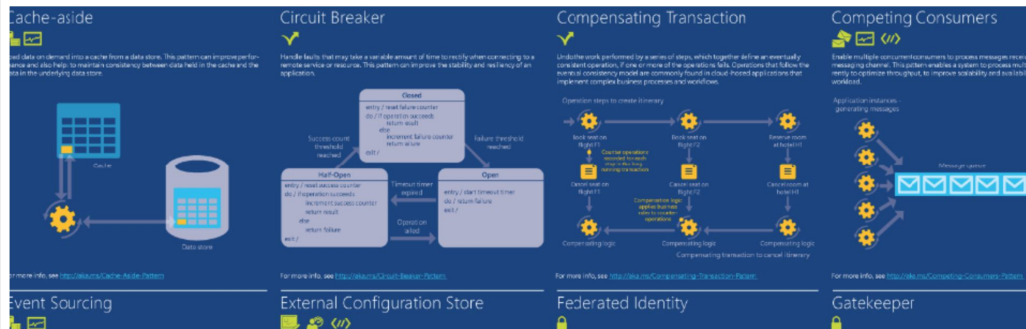
## Migrating your Existing Applications to the AWS Cloud

A Phase-driven Approach to Cloud Migration

# Cloud Design Patterns

Depicts common problems in designing cloud-hosted applications and design patterns that offer guidance.

Click on the infographic below to zoom in and view in detail or download it straight to your machine.



## Gartner Identifies Five Ways to Migrate Applications to the Cloud

Analysts Explore Application Modernization at Gartner Application Architecture, Development & Integration Summit 2011, 16-17 June, London

Organizations seeking to move applications into the cloud have five options: rehost on infrastructure as a service (IaaS), refactor for platform as a service (PaaS), revise for IaaS or PaaS, rebuild on PaaS, or replace with software as a service (SaaS), according to Gartner, Inc.





**maps can be useful**



**journeys will always differ**



**move only what needs**





ThoughtWorks®

THANK YOU

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